

# UNIVERSITY OF CALIFORNIA.

## AGRICULTURAL EXPERIMENT STATION.

BERKELEY, CAL.

E. W. HILGARD, Director.\*

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BULLETIN NO. 98.

### DISTRIBUTION OF SEEDS AND PLANTS.

As has been stated in our previous bulletins announcing distributions of seeds and plants, the distribution is undertaken for the purpose of securing a popular verdict on the value and adaptability in all parts of the State of the growths which we have under observation on the grounds of the Central Station at Berkeley and of the four outlying stations in Amador, San Luis Obispo, Tulare and Los Angeles counties. With this purpose in view, our distribution contemplates the acceptance of an obligation by the applicant to faithfully experiment with the material supplied and to report success or failure. That this obligation is conscientiously discharged by a large proportion of our correspondents is shown by the full data credited to such sources in our recent reports. This distribution from the station is for the purpose of securing wide trial of growths new to the State, and does not include common trees, plants and seeds which can be had from dealers. For this reason, we do not invite applications for general supplies of garden seeds or fruit-trees. We cannot furnish them.

We cannot undertake distribution to citizens of other States except where desirable exchanges are offered.

*Terms.*—Our experience has demonstrated that requiring a small contribution insures the applicant's interest and relieves us from the profitless work of supplying the throng of people who always carelessly send for what costs them nothing, and who, as a rule, give no attention to the trial of the material sent them, and therefore do not report results. For this reason, applicants are requested to send the amount specified in connection with each description below to meet the expenses of packing and postage. If they desire seeds sent by express, applicants need not send the amounts specified for postage, but all orders for SEEDS by express must be accompanied by a remittance of 25

cents to pay for packing. *Express charges are paid by the recipient.* Applications may be made for one or more kinds of seeds, but an applicant should not order more than one package of a kind. In case any kind of seed becomes exhausted, the money sent will be returned, unless a second choice is mentioned by the sender. Postal notes are requested instead of stamps whenever practicable. Any surplus left after filling orders will, as far as possible, be returned to the senders, deducting letter postage.

#### NEWLY-INTRODUCED TABLE FIGS.

The search for a drying fig which shall enable us to produce an article comparable with the Smyrna fig of commerce has obscured efforts to add to our list of desirable varieties for table use. This must be regarded as unfortunate, when it is remembered that probably no fruit succeeds over a greater area of California than the fig. All parts are not suited for drying figs, but the whole State, except the higher mountain valleys and some parts of the immediate coast line, can successfully produce figs if varieties suited to local conditions be secured. To increase knowledge in this direction, large plantings of varieties new to the State were made at our outlying-stations. These varieties were derived indirectly from the collection made by Dr. Hogg for the Royal Horticultural Society of England. Preliminary statements of the behavior of these varieties were made by Inspector C. H. Shinn in Bulletin 96 of this station, and a fuller review will appear in our next annual report. Some of the varieties have proved so desirable for several reasons that we now offer cuttings to those desiring to test new varieties of this fruit. Applicants may choose from the following list:

- 1—*Abundance Precoce.*—Small, early, prolific, good quality.
- 2—*Black Marseilles.*—Small, medium early, high quality.

\* Absent on leave, 12 mos., from June 15, 1892.



3—*Early Violet*.—One of the earliest, small but good; commended for localities having a short season.

4—*Hirta du Japon*.—Medium size, roundish with long stalks, skin very dark, flesh opaline, quality best, very prolific.

5—*Monaco Bianco*.—Above medium size, roundish oblate, skin green, flesh dark red, juicy and exceedingly rich; a free bearer.

6—*Col. de Signora Bianco*.—Medium sized, pyriform, long, ribbed neck, skin green, changing to yellow; flesh deep red, very rich and luscious; a strong grower; late, suited for a warm region.

7—*Du Roi*.—Small, roundish, pale yellow; very fine quality.

8—*Bourjassote Blanche*.—Small, round or turbinate; dull green, inclining to tawny; flesh pale rose, sweet and rich.

9—*Bourjassote Grise*.—Medium size, roundish and flattened; dull brown or tawny, with purple patches; flesh deep red, rich and luscious; uniformly good, and a free bearer.

10—*Drap d'Or*.—Small, roundish, no neck; pale greenish yellow, shaded with brown; flesh delicate amber, thick, juicy and excellent quality.

11—*De Constantine*.—A fig of good quality, stands frost fairly.

12—*Agén*.—Medium size, roundish; skin bright green, cracking longitudinally when ripe, showing white bands; flesh deep red, very rich; a good bearer, but very late, requiring a long hot season.

We will send small bundle of named cuttings, assorted, as many varieties as are in supply, for 25c. by mail, postpaid.

#### ITALIAN GRAPE VARIETIES.

Two years ago we secured from Italy a collection of about 50 leading Italian grape varieties, as described in Bulletin 91 of this station. In addition to propagation for planting at our outlying stations we have rooted a similar supply for distribution. As they are new to the State we commend them for local experiments. The varieties now available are as follows:

1—*Cipro nero*.—From the island of Cyprus, where it makes the best wines, called "La Comanderia;" also a nice table grape, but ripening late.

2—*Cesane nero*.—From the "Campagna di Roma," where it is most abundantly cultivated and gives a fine and strong wine.

3—*Paga-debito*.—A black variety from the "Puglie." Good for wine, abundant bearer.

4—*Monica*.—A black grape. Its wine is one of the best in Sardinia.

5—*Neiretta*.—This black variety is very much cultivated at the Saluzzo vineyards, Piedmont; a heavy bearer.

6—*San Giovelo*.—A Tuscan variety, which, blended with *Canajolo* and *Malvasia bianca* (without perfume), makes the majority of good Tuscan wines. According to Count Rovasenda's experiments, it would make a good blend with *Freisa* and *Barbera*.

7—*Neiretto grosso canavese*.—From Piedmont; abundant acidity and of fairly deep color.

8—*Danugue*.—A Southern French variety,

identical with the *Gros Guillaume* from Nice, possessing large berries, but of late maturity.

9—*Ocru di bove*.—Black variety from Sardinia, very large-berried, late maturity.

10—*Favorita*.—According to Count Rovasenda, is identical with the "*Vermantino di Liguria*," a good white variety both for wine and table use.

11—*Catarattu a la Porta*.—A white Sicilian variety for wine; a heavy bearer, with large and yellow-colored berries, but matures late. The Catarattu varieties are used in making the famous Marsala wines.

12—*Bellino*.—A Piedmont black variety, fine for table use; identical with "*Imperial nero*."

13—*Passaretta*.—Cultivated in Piedmont both for wine and raisins. Their berries are very like a bird's eye.

14—*Crejidero*.—A Spanish white variety, good for table use; fine-looking, but of late maturity.

We will send bundles of rooted vines, assorted varieties, from the above, 25 cents for each package; express charges to be paid by the recipient.

#### FOREST AND SHADE TREES.

*A New Acacia*.—We have grown from seeds donated by Baron F. Von Mueller, seedlings of *Acacia auilacocarpa* or *leptophleba*, which we believe has not hitherto been distributed in California. This tree is locally known in Queensland as the "Hickory wattle." It yields a tan bark which is used in Queensland to some extent. The wood is hard, heavy, tough and dark red; useful for cabinet work. We desire to ascertain the desirability of the tree in this State for ornamental or economic purposes. We will send three seedlings to each applicant: 25c per lot by express.

*Lemon-scented gum (Eucalyptus citriodora)*. This tree has already gained entrance to the State, but the frequent application to us for it induces us to offer seedlings this year. It is described by Von Mueller as a native of Queensland and generally found on sterile, stony ridges. Its adaptability is, however, seriously limited by its susceptibility to frost. It is useless to plant it on low, frosty situations, and our experience indicates that it is very much more tender than the blue gum. We would like to have it tried in thermal belts in different parts of the State. It withstands heat and drouth remarkably, and under favorable conditions is a very rapid grower. The timber is very strong and desirable. Its leaves are richly supplied with a lemon-scented oil which is a commercial product in Australia; the leaves are also used in houses for their fragrance. They contain no eucalyptol which gives the characteristic odor to all other species which we have introduced. We send three plants to each applicant: 25c for each lot by express.

*Black Wattle (Acacia decurrens)*.—This



tree has demonstrated its adaptation to most California climates, is a rapid grower and very desirable. Those who have succeeded in sprouting the seed after immersion in boiling water, write very enthusiastically of the tree. Others have failed to secure germination and for their benefit we offer this year small trees of our own growing: three trees to each applicant, 25c for each lot by express.

#### A ROOT FOR TANNERS' USE.

Forest supplies of barks yielding tannin have become so reduced that commercial tanners have been led to seek other sources of supply. There is a plant native to the southwest region of the United States, the root of which has been used from time immemorial by Mexicans and Indians for tanning, and is now receiving the attention of tanners in the eastern States and in Europe. It is named "Canaigre" in the Mexican vernacular and "sour dock" by Americans. Its botanical name is *Rumex hymenosepalum*. It is reported that gatherings of the wild root have been so large during the last two years that it is difficult to obtain it in quantity, and plantations recently made in New Mexico have proved profitable, \$5 per ton being paid for the green root which is worth \$60 to \$80 per ton dried and delivered in Europe. The yield in cultivated land is said to reach 16 tons to the acre of green root. Canaigre has been grown in our Garden of Economic Plants for a number of years, and analyses of the root fully, given in our report for 1890, show that the root is rich in tannin. The plant thrives in dry, sandy soils, and our experiments show its success also on adobe when cultivated. To those who desire to test its growth and profitability we offer seed, reminding applicants, however, that it is a relative of "sorrel" and "yellow dock" and therefore a weed which should be carefully handled, although our growth and seeding of it for several years does not disclose a disposition to rapid extension outside of its own area. We send seed in two-ounce packages for five cents each, postpaid.

#### A GREEN MANURE AND WINTER FORAGE PLANT.

For several years there has been request for a plant which would make a quick growth under our customary winter temperature. Several indigenous and remotely introduced clovers and other plants do this, and on ground naturally seeded with them it will perhaps be found impossible to procure better plants. For obvious reasons, however, constantly cultivated soil exhausts its natural seed supply, and there are other lands in which desirable seeds do not exist

in quantity. There is, then, a wide demand for a winter-growing plant (a), the seed of which is in adequate commercial supply; (b) an annual plant, having therefore, a perishing rather than a perennial root; (c) a leguminous plant, because of the well-known ability of such a plant to constantly add to the supply of nitrogen compounds in the soil. A plant which seems to meet these requirements in a notable manner is the "Crimson clover" (*Trifolium incarnatum*), a plant indigenous to northern and central Europe, and therefore not in any sense a new plant. The seed was introduced for trial in our Garden of Economic Plants many years ago, and has been also in the hands of a few private experimenters. Although it made a very quick and luxuriant winter growth, its disappearance at the beginning of the dry season led those who hoped to find in it a dry-land forage plant for summer pasture to pronounce it a failure, and so, indeed, it is from that point of view. It is likely that such judgment may be reversed when the plant is estimated by its winter growth, whether it be for early pasturage or more especially upon recognition of its value in producing a heavy crop while winter moisture is abundant, for plowing under as green manure in the early spring. During the last few years Crimson clover has become very popular for such use in some of the southern States, and there is abundant testimony of its value in refreshing orchard soils, for which it should be chiefly tested in this State. It is also worthy of note as a bee-forage plant, and may serve the stockgrower as well for winter feed, for it grows thriftily under temperatures which check the growth of alfalfa. The plant should not be confused with the common red clover of the East (*Trifolium pratense*), from which it is wholly distinct.

Those who are disposed to make large trial of Crimson clover for green manuring of orchards (and we hope some will do it), can procure the seed of leading California seedsmen at a moderate price, and 20 pounds should be sown per acre as early in the winter as possible. We can distribute the seed only in small parcels, which will enable the experimenter to observe the growth of the plant and determine its fitness for larger use next year. We send 4 oz. packets, postage paid, for 5c.

#### A NEW FORAGE PLANT—THE FLAT PEA.

In 1891 we received from the U. S. Dept. of Agriculture a small packet of seed of a forage plant which had recently been brought prominently to notice abroad, and was apparently commended by experiments



on drifting sands and in other unfavorable and arid conditions. It has been popularly named the "flat pea," and is botanically *Lathyrus sylvestris*. It is a perennial legume, having much the form of growth of the "everlasting pea." Plants grown from the seed furnished us, and planted late in 1891, rapidly extended themselves and practically filled the soil of the plot with rambling rhizomes. The present season there was a dense mat of haulm or vine formed which covered the ground and reached a length of about four feet. All through the dry summer months it maintained a bright green and grew continuously. The top growth was cut away in September and fed to animals which ate it readily. The plant did not bloom, and the cutting was for the purpose of stimulating new shoots from the running roots, so that we might have plants for this year's distribution rather than wait another year for the seed. After the cutting the new growth started rapidly. Our observation thus far indicates that the plant grows vigorously throughout the dry season at least in the coast region. Its foreign reputation gives it a very permanent rooting and long service in the most arduous situations.

Analysis of the fodder made at this station gives the plant very high nutritive value.

ANALYSES OF FLAT PEA AND ALFALFA COMPARED.

	<i>Lathyrus</i> <i>Sylvestris</i> California. (Jaffa.)	<i>Lathyrus</i> <i>Sylvestris</i> England (Hope.)	Alfalfa Average.
Moisture.....	63.48	58.63	67.46
Crude protein..... (Mainly flesh-form'g)	8.18	7.44	5.91
Crude fat.....	1.63	2.05	1.15
Carbohydrates .....	13.77	16.58	12.02
(Starch, sugar, gums, etc.)			
Crude fiber.....	9.76	12.21	10.51
Mineral matter (ash)...	3.18	3.09	2.95
Totals .....	100.00	100.00	100.00

The differences in composition as shown by the two analyses are, at least in part, due to the fact that we cut our sample before blooming, while the English sample was past bloom and the stems were therefore more mature.

A part at least of the root sets of the flat pea should be carefully planted in the garden or field corner where they can be watched and protected the first year. If the growth be satisfactory, the roots can be distributed here and there in waste places the following year, or the seed can be secured

for the same purpose. We will send a small package of roots postpaid for 10c.

#### ANOTHER FORAGE PLANT.

**ELLIOTT'S SIDA.**—This plant (*Sida Elliottii*) was widely distributed by seed last year, but we could not meet all the demands made for the seed. In some cases, failure of the seed to germinate has been reported. For these reasons, we offer the seed again this year. The plant is a low bush commended for trial on dry pastures for grazing and not, of course, for mowing. It grows finely in our heavy clay soil, and the plant which received no irrigation whatever looks more thrifty than another plant, which was moderately watered through the summer. It sends down a long tap root, and while young is quite leafy and succulent. It seeds freely and promises to extend itself. Scatter the seed, on hilly pastures, scratching it in here and there with a rake. Mark the places so that it can be looked for afterward. Seed will be sent by mail in small packages for 3c.

#### CUTTINGS AND SCIONS.

**Osier Willows.**—Nine named Austrian varieties; sent in lots of 10 of a kind; 10c. per lot, or one dozen assorted, 20c. by mail.

**Mulberries.**—Cuttings of the following kinds can be had: (1) Multicaulis; (2) Alba; (3) Russian; (4) Downing's Everbearing; (5) Lhoo; (6) Nagasaki. Sent in lots of 10 of a kind; 10c. per lot, or 12 cuttings assorted, 20c. by mail.

**Fruit Tree Scions.**—The University orchard contains upward of 500 named varieties of fruit, and we can furnish grafting scions of apples, pears, apricots and plums in variety. State what character of fruit is desired and for what purpose.

We do not furnish rooted trees, but scions, for grafting. Send ten cents for each dozen ordered of a single kind, or 20c. if a dozen of assorted varieties is ordered.

#### VEGETABLES.

**Perennial Bean.**—A handsome, large, white bean, with a perennial root, from which climbing runners start each year. The seed was donated by Mr. Henry Melde, of Humboldt county. It is worthy of general trial. We can only send a few beans to each applicant; 3c. per packet by mail, postpaid.

**Spinach.**—New Zealand (*Tetragonia expansa*); described by Von Mueller as a good culinary herb and as useful for restraining drifting sands; growing even during severest heat and drouth. Seed in 1-oz. packets, 3c. We expect to send out seeds about January 1, and PLANTS ABOUT FEBRUARY 1.

E. J. WICKSON,  
Berkeley, Cal.

December 15, 1892,